

USGS 2019 Sampling Data Presentation

Presenter Jeff Frey (USGS)

- 1.
2. Introduction by Lou Renshaw
 - a. Doodle poll will be sent out in near future to schedule next meeting
3. Jeff Frey Presentation
 - a. 3 years of data collected by the USGS
 - b. Monthly equal width increment sampling with auto sampling
 - i. Target 5-8 flood events
 - ii. All samples analyzed for total and dissolved nutrients
 - iii. Samples focused on spring season (March 1 – July 31)
 - iv. 100 samples per year per site, 10 percent are QA/QC
 - v. 6000 total samples collected
 - c. Sample Sites
 - i. 2014-2015: 9 total sites
 - ii. 2017 added 5 new sites
 - iii. 2018 3 new sites in IN, 3 new sites in MI
 - iv. 4 sites on Maumee, rest on major tributaries
 - v. USGS sampling ends at Defiance, OH
 - d. Daily Mean Concentration and Daily Mean Loads
 - i. Graphical Constituent Loading Analysis System
 1. Interpolation system
 - e. Cross-section sampling
 - i. Autosamplers are limited to sampling one point of a river
 1. Stream may not be well mixed
 2. Stream portions may have different loads during events
 - ii. Cross section sample samples from multiple sections of the stream and compared to autosampler data.
 - iii. Comparison creates a coefficient that is applied to autosampler results during certain parts of the year.
 - iv. All samples are analyzed in the same way across the watershed
 - f. Data results
 - i. None of the sites met the target spring FWMC for OP or TP
 - ii. The St. Joe contributes much less than the St. Marys
 - iii. St. Marys river is a hot spot for P and both Ohio and IN need to decrease transport
 1. Ft. Wayne has site has higher spring and annual OP and TP FWC than Wilshire OH, but yields are greater at Wilshire
 - iv. Very little difference between SR101 and Antwerp sites in 2019 (Ohio-IN border)
 - v. 2019 was a very wet year, many fields went fallow
 1. Nitrate loads and FWC decreased by 22-50% between 2018 and 2019
 2. TP and OP did not decrease between 2018 and 2019

3. Legacy P from internal stream and soils might be an important factor when developing management planning (supported by research)
- g. Wet weather BMP
 - i. 1,500,000 acre increase in fallow/idle land (planted to cover crops mostly)
 - h. Questions/Discussion
 - i. Jill Reinhardt brought up cover crop on prevented planting
 - ii. Steve Davis: no difference in 2018/2019 P results, legacy P is an issue. Projection of P for discharge by FWMC is down by 24%, lower fertilizer application may also have an effect on decreased or changed loads.
 - iii. Christopher Winslow: clarified that legacy is an important factor, can be due to larger flows despite lower fertilizer application
 - iv. Laura Johnson: Heidelberg network has different loads than USGS data, may be a discrepancy or some other issue between the two data sets. Hypothesized on the effect of started fertilizers and wet springs on the FWMC.
 - v. Lou Renshaw: St. Marys River Assessment Report: suspended sediment from stream bank is a source for P
 - vi. Chris Winslow: would like to measure stream bank sloughing, Hi-res imaging, or measured change in the river
 - vii. Messaging is important. Areas should not be classified as hot spot or not, but as hotter spots or less hot spots.
 - viii. Do we refer to prevented planting as BMPs? Maybe not a good move.
 - ix. Legacy pollutants vs other sources (animal sources, manure application, etc.) prevented planting may have had additional effects on things like manure application, etc.
 - x. Manure application is a much lower source of P/N than fertilizer. Manure is only applied to a minority of fields. Fertilizer is applied to almost every field.
 - xi. Winslow brought up some P source tracking research being conducted by individuals in the Midwest